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CHARLESTON, TN 37310-0248

VIA: E-MAIL AND U.S. MAIL

August 2, 2006

Roger W. Briggs
Executive Officer
California Regional Water Quality Control Board
Central Coast Region
895 Aerovista Place, Suite 101
San Luis Obispo, California 93401

RE: Monitoring and Reporting Program Corrections

Dear Mr. Briggs:

In a letter dated November 2, 2005, the Central Coast, Regional Water Quality Control Board (Water Board) issued a revised Monitoring and Reporting Program (MRP) No. 2001-0161 in an attempt to combine rescinded MRP No. 2003-0168 with MPR No. 2001-0161. While Olin is certainly in favor of compiling a less fragmented MRP, the combined document contains internal inconsistencies, requires further delineation of critical terms, and it contains elements that depart from the intent of combining the pre-exiting monitoring and reporting programs.

Olin's concerns regarding the combined MRP were noted in my letter dated November 18, 2005 and were thoroughly discussed the Water Board staff during a December 20, 2005 meeting. Following these discussions, on January 10, 2006 Olin provided the Water Board with proposed revisions to the MRP that, as requested, included our rationale for the revisions, text clarifying our understanding of certain terms, and corrections to several technical elements. The proposed revisions are attached. While Olin continues to perform monitoring consistent with our understanding that RWQCB's intent was to consolidate MRP No. 2003-0168 with MRP No. 2001-0161, the inconsistencies, undefined terms, and departing elements remain unresolved.

Nevertheless, we look forward to working with the Water Board to create a consolidated MPR that eliminates the many issues and inaccuracies presented by the MPR issued November 2, 2005. Water Board communication regarding this matter should be directed to Rick McClure at (423) 336-4576.

Sincerely,
OLIN CORPORATION

[Original Signed By]

Curt M. Richards
Vice President
Health, Safety and Environmental

/attachment

/ec: Eric Gobler – RWQCB (electronic copy)
Hector Hernandez – RWQCB (electronic copy)
Rick McClure – Olin Corporation (electronic copy)
Dave Share – Olin Corporation (electronic copy)
Don Smallbeck – MACTEC (electronic copy)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM NO. 2001-161
(Revised November 2, 2005)
FOR
OLIN CORPORATION
425 TENNANT AVENUE, MORGAN HILL
SANTA CLARA COUNTY

[NOTE: The following preamble is suggested to provide an overview of the various groundwater monitoring required in Section I and for on-site remediation monitoring in Sections II and III of this MRP:]

This Monitoring and Reporting Program (MRP) applies to groundwater monitoring and remediation at the Olin Corporation (Olin) property located at 424 Tennant Avenue, in Morgan Hill, California (the site). Section I applies to on-site and off-site groundwater monitoring. On-site soil remediation monitoring is provided in Section II and Section III pertains to the on-site groundwater extraction and perchlorate removal system.

I. GROUNDWATER MONITORING

[NOTE: To clarify the types of groundwater monitoring required in this MRP, the following paragraph is suggested.]

The on-site wells include standard, purpose built monitoring wells utilized to characterize the site and evaluate the effectiveness of the on-site Groundwater Treatment System (GTS). Three tiers of off-site wells are incorporate into this MRP. The first tier wells are domestic wells with minimal well installation and/or construction information. Monitoring of these wells shall be conducted pursuant to Cleanup and Abatement Order No. R4-2004-0101, as revised by the State Water Resources Control Board Order WQO 2005-0007. The second tier wells, known as "Representative" wells consist of domestic wells with documented installation/construction information and limited screen lengths. A subset of Representative wells (i.e., those with well bore access) are also used to evaluate groundwater flow direction within the basin. The third tier wells are purpose built, dedicated monitoring wells to characterize the hydrogeology and extent of perchlorate within the Llagas Subbasin. The sampling procedures, sampling frequency, and reporting requirements are described herein.

Prior to sampling, groundwater elevations and depth to groundwater shall be measured as directed in Table 1. For dedicated monitoring wells, the well ~~Wells~~ shall then be purged until pH, temperature, dissolved oxygen (DO), oxidation reduction potential, and electrical conductivity reach a steady state ~~and a minimum of three casing volumes have been removed~~ **[RATIONALE: Substantial documentation exists that when using low-flow sampling techniques (which Olin does), purging 3 casing volumes is not necessary. Sampling a well should begin when the field parameters**

stabilize]. Alternative well purging techniques, with technical justification demonstrating equivalency, may also be used. Once recovered, wells shall be sampled and analyzed in accordance with Table 1 below. Purging is not required before sampling domestic wells.

~~**TABLE 1**~~
~~SAMPLING REQUIREMENTS~~

~~WELL NO.~~	~~CONSTITUENT~~	~~UNIT~~	~~FREQUENCY~~
	~~Depth to ground water[3]~~ ~~Ground water elevation[3]~~ ~~Perchlorate (Use EPA Method 314)~~		~~Quarterly in Mar., Jun., Sep., & Dec~~
~~Onsite monitoring wells MW-1 through MW-3 and MW-SW-004 through MW-SW-011, Morgan Hill Tennant Avenue Municipal Well, newly installed monitoring wells, offsite wells 1 through 42[1] (see Table 2), and all offsite domestic or agricultural or municipal wells with previous detections between 2 µg/l and 4 µg/l[2].~~	~~Depth to ground water[3]~~ ~~Ground water elevation[3]~~ ~~Perchlorate (Use EPA Method 314)~~	~~Feet~~ ~~Feet~~ ~~µg/l~~	~~Quarterly in Mar., Jun., Sep., & Dec~~ ~~Quarterly in Mar., Jun., Sep., & Dec~~ ~~Quarterly in Mar., Jun., Sep., & Dec~~

~~[1] Wells with similar location, screen interval, and flow rate may be substituted for wells that are not available for monitoring with the concurrence of the Executive Officer of the Regional Board.~~
~~[2] Monitoring is required as additional wells with perchlorate detections between 2 µg/l and 4 µg/l are identified. The Executive Officer may require sampling of additional wells to assess the variability of perchlorate over time, concentration trends, and lateral and vertical plume migration. If the vertical distribution of perchlorate cannot be determined with the existing network of monitoring wells, multiple screened monitoring wells may be needed.~~
~~[3] Required for all monitoring wells and for those domestic and agricultural wells with well porthead access for measuring water levels.~~

[NOTE: A couple suggestions are proposed for Table 1: (1) to clarify the difference between "On-Site" and "Off-Site" wells and (2) to clarify the change in sampling frequency starting June 1, 2006, as a result of the State Board order. In addition, the last sentence under that heading "Well No." (i.e. "and all offsite domestic or agricultural or municipal wells with previous detections between 2 µg/l and 4 µg/l[2]" is a hold-over from an outdated MRP. As indicated in the

State Board CAO, sampling of wells < 6 ppb is also tiered (see Table 3). We suggest that this sentence to be modified to wells > 4 ppb and include the phase: "reasonable attributed to the Olin site". This language had been previously used in the MRP, but for some reason was deleted. If not, then in a literal sense, any well in the Central Coast area or Llagas Subbasin > 4 ppb becomes subject to this MRP. These suggested are included in the Table below:]

TABLE 1
SAMPLING REQUIREMENTS

WELL NO.	CONSTITUENT	UNIT	FREQUENCY
ON-SITE: GTS performance monitoring wells[1] (as amended by this MRP) and the Tennant Avenue Municipal Well	Depth to ground water[3] Ground water elevation[3] Perchlorate (Use EPA Method 314)	Feet Feet µg/l	Quarterly in Mar., Jun., Sep., & Dec
OFF-SITE: Domestic wells pursuant to State Board Order WQ 2005-0007 wells (Table 2); Llagas Subbasin Monitoring Network wells (Table 3); and Newly installed monitoring wells; and offsite domestic, agricultural, or municipal wells with previous detections > 4 ppb that are reasonably attributed to the Olin Site[2].	Depth to ground water[3] Ground water elevation[3] Perchlorate (Use EPA Method 314)	Feet Feet µg/l	Quarterly in Mar., Jun., Sep., & Dec. Beginning June 1, 2006, wells < 6.0 ppb shall be sampled according to Table 4.

[1] Wells with similar location, screen interval, and flow rate may be substituted for wells that are not available for monitoring with the concurrence of the Executive Officer of the Regional Board.

[2] Monitoring is required as additional wells with perchlorate detections > 4 µg/l are identified. The Executive Officer may require sampling of additional wells to assess the variability of perchlorate over time, concentration trends, and lateral and vertical plume migration. If the vertical distribution of perchlorate cannot be determined with the existing network of monitoring wells, multiple screened monitoring wells may be needed.

[3] Required for all onsite and offsite dedicated monitoring wells and for those domestic and agricultural wells with well port access for measuring water levels.

[NOTE: The purpose of this revised MRP was to consolidate and simplify the somewhat fragmented reporting requirements from 2 previous MRPs (this one and MRP 2003-168). In addition, we recommend consolidating the sampling requirement included in the State Board revised CAO, Appendix A table below (Table 2). Further, we should update the monitoring

network table so that it is consistent with the *Llagas Subbasin Monitoring Plan* (MACTEC, 4/05) as Table 3. The following brief paragraph is also suggested preceding Table 2.]

As indicated in the Regional Water Quality Control Board Cleanup and Abatement Order No. R4-2004-0101, as revised by the State Water Resources Control Board Order WQO 2005-0007, beginning June 1, 2006 Olin is required to sample certain domestic wells southeast of the Site pursuant to the sampling frequency provided in Table 2.

TABLE 2
DOMESTIC WELL SAMPLING FREQUENCY

RANGE	SAMPLING FREQUENCY
5.0 to < 6.0 ppb	Olin will sample bimonthly. After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a bimonthly basis. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample at least twice per year for one year (monitoring should occur during wet and dry seasons or during periods of maximum concentration changes as determined by the Mann-Kendall trend analysis). If trend is still stable (S), decreasing (D) or probably decreasing (PD), Olin will sample once in the next year. If that concentration is < 6.0 and trend remains stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence.
4.0 to <5.0	Olin will sample at least twice per year (monitoring should occur during wet and dry seasons or during presumed periods of maximum concentration changes). After four data points, Olin shall evaluate the data using the Mann-Kendall variability analysis. If there is no trend (NT) or if the concentration trend is increasing (I) or probably increasing (PI), Olin shall continue to sample on a semiannual basis, or bimonthly if the concentration exceeds 5.0. If the trend is stable (S), decreasing (D) or probably decreasing (PD), then Olin will sample once in the next year. If that concentration is < 5.0 and the trend is stable (S), decreasing (D) or probably decreasing (PD), Olin may stop sampling with Executive Officer concurrence.
< 4.0 wells (other than wells that were previously in the sampling programs in the above two ranges) within 500 feet of wells that have had a 6 ppb result.	Olin shall sample semiannually for one year. If the perchlorate concentrations remain less than 4 ppb, then Olin shall sample once in the next year. If that concentration is less than 4 ppb, Olin may stop monitoring with Executive Officer concurrence.

~~**45 Representative MRP Wells**~~	~~09S03E26L004, 09S03E26R007, 09S03E34B005, 09S03E34C002, 09S03E34E005, 09S03E34P001, 09S03E35E006, 09S03E35G005, 09S03E35N013, 09S03E36E007, 09S03E36P003, 10S03E01A011, 10S03E01E007, 10S03E02C005, 10S03E02G002, 10S03E02K001, 10S03E03C009, 10S03E11E007, 10S03E11G001, 10S03E12C004, 10S03E12G012, 10S03E12M009, 10S03E13D001, 10S03E13K005, 10S03E14B006, 10S03E24H004, 10S04E06L008, 10S04E07E035, 10S04E07N005, 10S04E07R009, 10S04E17F011, 10S04E17N012, 10S04E18J011, 10S04E19D015, 10S04E19F008, 10S04E20L007, 10S04E20M002, 10S04E29C001, 10S04E29P002, 10S04E30C005, 10S04E30R002, 10S04E32E005, 10S04E32E006, 10S04E32E007~~

[NOTE: As indicate above, the "45 Representative MRP Wells" list above is outdated and is inconsistant with the wells proposed in the "*Llagas Subbasin Monitoring Plan*." The wells above that ARE included in the monitoring network prosal are highlighted in "yellow". The proposed network consists of the wells listed below:]

TABLE 3
LLAGAS SUBBASIN MONITORING WELL NETWORK

Llagas Subbasin Monitoring Well Network	**Dedicated Monitoring Wells:** MW-16 (Fisher Ave.), MW-17 (Fisher Ave.), MW-21 (Middle Ave.), MW-26 (San Martin Ave.), MW-29 (Church Ave.), MW-35 (Center Ave.), MW-40 (Marcella Ave.), MW-44 (Holsclaw Rd.), **Representative Monitoring Wells:** 09S03E34C003, 09S03E34Q005, 09S03E35M001, 09S03E34R017, 10S03E03C009, 10S03E01H015, 10S03E01K014, 10S03E01M003, 10S04E07D014, 10S03E11G001, 10S03E14A002, 10S03E13K005, 10S04E07N023, 10S03E13H001, 10S04E07R009, 10S04E19K007, 10S04E20M006, 10S04E19Q006, 10S04E29C001, 10S04E33P004, 11S04E04K001, 11S04E04K010, 11S04E04R011 **Sentry Wells:** 10S04E32E005, 10S04E32E004, 10S04E32E006,11S04E05C005, 11S04E05C006,

[NOTE: Since the 8/31/05 Amended Samping Requirement table doesn't have a introductory-type paragraph, the following language, primarily from the Board's 8/31/05 letter re: the 2nd Quarter 2005 Groundwater Monitoring report, is suggested:]

Based on Olin's request to stop sampling seven on-site wells due to their proximity to other on-site monitoring wells, detection of perchlorate, and screen lenght, on August 31, 2005 the Water Board staff revised MRP No. 2001-151 as follows:

TABLE ~~3~~ 4
8-31-05 ~~AMMENDED~~ AMENDED SAMPLING REQUIREMENTS

WELL	AQUIFER ZONE	CHANGE	COMMENTS
MW-02	AQUIFER A	NO	GCTS Data is a mixture of surrounding groundwater (including downgradient) and MW-02 is representative of upgradient, onsite A-zone groundwater and has a long historical data set. Groundwater elevations shall be monitored quarterly.
MW-11SA1	AQUIFER A	YES	Groundwater elevations shall be monitored quarterly.
MW-10SA1	AQUIFER A	YES	Sample Annually – Alternate sampling between periods of high and low groundwater. This well has had a recent trace detection of perchlorate, reported near recorded high groundwater elevations. Water Board staff will reconsider reducing the monitoring frequency once additional data is collected. Groundwater elevations shall be monitored quarterly.
MW-11SA2	INTERMEDIATE B1	YES	Sample Annually – Alternate sampling between periods of high and low groundwater. This well has had a recent detection of perchlorate at 4.0 µg/L, reported near recorded high groundwater elevations. Water Board staff will reconsider reducing the monitoring frequency once additional data is collected. Groundwater elevations shall be monitored quarterly.
MW-07SA3	INTERMEDIATE B2	YES	Sample Annually – Alternate sampling between periods of high and low groundwater. This well has had a recent trace detection of perchlorate at 3.1 µg/L, reported near recorded high groundwater elevations. Water Board staff will reconsider reducing the monitoring frequency once additional data is collected. Groundwater elevations shall be monitored quarterly.
MW-07SA4	INTERMEDIATE B3	YES	Sample Annually – Alternate sampling between periods of high and low groundwater. This well has had a recent trace detection of perchlorate at 3.8 µg/L, reported near recorded high groundwater elevations. Water Board staff will reconsider reducing the monitoring frequency once additional data is collected. Groundwater elevations shall be monitored quarterly.
OW-01C	DEEP AQUIFER C	YES	Sample Annually – Alternate sampling between periods of high and low groundwater. This well had a 4.2 µg/L detection of perchlorate in October 2004, reported near low groundwater elevations. Water Board staff will reconsider reducing the monitoring frequency once additional data is collected. Groundwater elevations shall be monitored quarterly.

A. SAMPLE PROCUREMENT LIMITATIONS: For any given monitored medium, the samples taken from ~~all Monitoring Points~~ the Llagas Subbasin Monitoring Well Network (Table 3) satisfying the data analysis requirements for a given Monitoring Period shall be taken within a span not exceeding 30-days, in a manner that ensures sample independence to the greatest extent feasible. A minimum of one sample shall be obtained from each ~~Monitoring Point~~ Llagas Subbasin Monitoring Well Network well during each corresponding Monitoring Period.

[NOTE: From our 12/20/05 discussion, we understand that this paragraph applies to the Llagas Basin Monitoring Network wells, not "all Monitoring Points". All monitoring point could mean all 800+ wells sampled during a quarter, which requires a lot more time than 30-days. The suggestions above reflects this understanding.]

B. GROUNDWATER FLOW RATE AND DIRECTION: For each monitored groundwater body, the water level in each well listed in Table 1 shall be measured, ~~at least~~ quarterly~~, including the times of expected highest and lowest elevations of the water level~~. Horizontal ~~and vertical~~ gradients, groundwater flow rate and direction for the respective groundwater body shall also be determined. Vertical gradients between representative groundwater bodies shall be determined from multi-port monitoring wells. Groundwater elevations for all wells in a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction. The observed groundwater characteristics shall be compared with those of previous determinations, noting the appearance of any trends, and of any indications that a change in the hydrogeologic conditions beneath the site has occurred. This information shall be reported in the Quarterly ~~Semi-annual~~ Monitoring Reports.

[NOTE: Requirements to measure water levels at the min/max levels effectively doubles Olin's costs without much benefit, since quarterly measurements reflect seasonal changes. Also, while some of the representative wells could be used to determine vertical gradients, the most accurate vertical gradients are obtained from the CMT wells. Lastly, this paragraph seems to imply, perhaps incorrectly, that "semi-annual" reports are required. Our suggestions are included above.]

C. RECORDS TO BE MAINTAINED: Written records shall be maintained by Olin's laboratory(s), and shall be retained for the duration of the cleanup activities. This period of retention shall be extended during the course of any unresolved litigation regarding this cleanup or when requested by the Executive Officer. Such records shall show the following for each sample:

1. Identity of sample and of the monitoring point from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of the personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Chromatographs and calculation of results.
6. A complete chain of custody logs.
7. Results of analyses, and the Method Detection Limit and Practical Quantitation Limit for each analysis.

D. REPORTING

1. FREQUENCY: Monitoring reports shall be submitted **quarterly** to the Regional Board by the **30th day of January, April, July, and October** and shall contain information collected during the previous quarter (October-December, January-March, April-June, July-September). The reports shall include the following:

2. GROUNDWATER MONITORING REPORTING LETTER OF TRANSMITTAL: A letter summarizing the groundwater monitoring results shall accompany each report. Such letter shall include a discussion of any violations found since the last report was submitted,

and shall describe actions taken or planned for correcting those violations. If detailed time schedule has been previously submitted for correcting violations, a reference to the schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or above, or by his/her duly authorized representative, if such a representative is responsible for the overall operation of the facility. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signers' knowledge the report is true, complete, and correct. In addition, the report shall be signed and stamped by a State of California licensed Civil Engineer, Geologist, or Engineering Geologist attesting, under penalty of perjury, that the report is true and accurate.

3. COMPLIANCE EVALUATION SUMMARY: The compliance evaluation summary shall contain the following information:
   a. Determination of the velocity and direction of groundwater flow: For each monitored groundwater body, a description and graphical presentation of the velocity and direction of groundwater flow under/around the facility, based upon water level elevations taken during the collection of the water quality data submitted in the Monitoring Report (i.e., groundwater elevation contour map for each water-bearing zone, beneath and adjacent to the facility). The analysis shall include a discussion of how observed groundwater rate, flow, and direction compare with those from previous determinations, the appearance of any trends, and any other items which may indicate a potential change in the hydrogeological conditions beneath and adjacent to the facility.

   ~~b. Pre-Sampling Purge: For each monitoring point addressed by the report, a description of the method and time of water level measurement, the type of pump used for purging and the placement of the pump in the well, and the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, dissolved oxygen, and turbidity testing, the well recovery time, and the method of disposing of the purge water).~~

   [NOTE: This paragraph requires significant data collection that requires time, effort and costs – without much benefit, particularly since the majority of the off-Site data collection is from production wells. For example, is the type of pump in a domestic well really critical? Does the RWQCB actual look at the purge data in this much detail? Paragraph 9 (below) is our preferred format for purge data submittal. As a result, we offer the follow suggested revision:]

   b. Pre-Sampling Purge: Tabular field sampling data for each dedicated monitoring well sampled, such as volume of purge water, time, pH, temperature, DO, oxidation reduction potential, and electrical conductivity." Pre-sample purge data for production wells is not required.

   c. Sampling: For each dedicated monitoring wells ~~Monitoring Point~~ addressed by the report, a description of the type of pump, or other device used, its placement for sampling, and a

description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the type of containers and preservatives used; the date and time of sampling; the name and qualifications of the person actually taking the samples; and a description of any anomalies).

[NOTE: Paragraph "c" seems to be applicable to the onsite monitoring wells, but not to the domestic wells. For example, Olin is sampling 800+ domestic well/quarter and, for the most part, neither the owner nor Olin knows the type of pump in the well. To make applicable to all dedicated monitoring wells. We offer the above suggestion.]

4. ~~DISCUSSION: A comprehensive discussion of compliance with the Cleanup or Abatement Order No. R3-2005-0014, and on and offsite cleanup operations progress. Include a summary of the groundwater analyses indicating any changes made since the previous report. Include a summary of corrective action results and milestones, and a review of construction projects with water quality significance completed or commenced in the past year or planned for the upcoming year.~~

[NOTE: A comprehensive discussion of Olin's compliance with CAO R3-2005-0014 (Basin Remediation) seems out of place in a MRP, Sect I "Groundwater Monitoring" and redundant, particularly when considering the number and subject matter of the reports presently required under the CAO. Corrective action and review of construction projects also seem inappropriate for a monitoring report. We suggest deleting the "DISCUSSION" paragraph. If not, suggest that we discuss the appropriately scope and revise the requirements.]

5. ~~AFFECTED PERSONS: An updated listing of all persons who either own or reside upon the land that directly overlies any part of the plume (affected persons). The listing must include contact information for all affected persons including but not limited to address, phone number, and other pertinent information. The listing must also include the date on which the affected persons were last updated regarding the existing groundwater plume(s). Note: Annual updates of plume information are required to be sent to affected persons each January 30th.~~

[NOTE: Clarification needed on a couple points and how "plume" shall be defined. For example, it appears that the Board is asking for a list of affected persons. If so, this is already being done in the quarterly report by identifying the wells exceeding 6 ppb. However, preparing a list as suggest would require Olin to breach our confidentially agreement with the Water District, which demands that we not release names, addresses, well ID number, etc. Execution of the confidentiality agreement was the only way Olin was able to obtain the well owner information contained in our database. Additionally, if the Board is asking Olin to provide notification that we have communicated to the land owner that their land overlies the "plume," we are already doing that as well by providing quarterly analytical results to the well owners. Finally, some clarification is needed as to how the "plume" will be defined. Based on the State Board Order, DHS, and OEHHA, we believe that perchlorate concentration >6 ppb appropriately defines the term "plume." As a result of these issues, we suggest the following:]

"5. AFFECTED PERSONS: For all wells with perchlorate concentration > 6 ppb, Olin shall provide a copy of the analytical results to the well owner within 60-days of receiving the final sample analysis information from their consultant.

~~6. CORRECTIVE ACTION SUMMARY: Discuss significant aspects of any corrective action measures performed during the monitoring period. Calculate load removed from the sites' impacted media (groundwater) by mass removal system(s). Mass removal calculations shall be based on actual analytical data. Present discussion and indications, relating mass removal data to the violation the corrective action is addressing.~~

[NOTE: This seems out of place for the "Groundwater Monitoring" section and seem more applicable to the on-Site GWTS. As a result, we suggest moving to Section III.]

~~7. GRAPHICAL PRESENTATION OF DATA: All analytical data must be presented in graphical format for each Monitoring Point. Each such graph shall plot the concentration of one or more constituents over time, at a scale appropriate to show trends or variations in water quality. Graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot down-gradient data. For each groundwater body monitored, graphical presentation shall also include iso-concentration contours and computer modeling of all significant plumes detected, as outlined in 8, below.~~

[NOTE: Paragraph 7 is another section that needs clarification on the use of the term monitoring point. This could be construed to mean all 800+ wells that Olin samples. The creation of a graphs to present the data for each monitoring point is extremely costly and provide little benefit since most of the 800+ wells are < 4 ppb. Also, clarification is needed for the RWQCB's references to background plots when discussing down gradient data. As a result, we offer the following suggestion:]

"7. GRAPHICAL PRESENTATION OF DATA: Analytical data for wells with perchlorate >6 ppb at any time in the previous 4 quarters must be presented in graphical format for each Monitoring Point. Each such graph shall plot the concentration over time, at a scale appropriate to show trends or variations in water quality. Graphs shall plot each datum, rather than plotting mean values. For each groundwater body monitored, graphical presentation shall also include iso-concentration contours and/or computer modeling of perchlorate, as outlined in 8, below.

8. MAP: All monitoring reports shall include the following maps:
   a. A map or aerial photograph clearly showing the locations of all ~~Monitoring~~ monitoring ~~Points~~ points. Monitoring points shall be labeled.
   b. For each groundwater body monitored, a map depicting groundwater contours and flow directions to the greatest degree of accuracy possible.
   c. A separate plume map shall be provided for each formation (groundwater bearing zone) showing the extent of known contamination, defining monitoring points, and groundwater flow direction.

9. FIELD DATA: Tabular field sampling data for each dedicated monitoring well sampled, such as volume of purge water, time, pH, temperature, DO, oxidation reduction potential, and electrical conductivity; field data is not required for production wells.

   [NOTE: This information is currently provided for all on-Site monitoring wells and will be provided for the off-Site monitoring wells. However, since over 800 domestic wells are sampled/quarter, this information is unnecessary for domestic wells that are in near constant use. The intent in collecting "field data" is to ensure that possibly stagnant water in the well string is removed before sampling. This isn't necessary for domestic wells.]

10. LABORATORY RESULTS: Laboratory statements, concerning the results of all analyses, demonstrating compliance with the most recently approved Sampling & Analyses Plan. Additionally, the results of all sampling and analyses performed outside the requirements of this Monitoring and Reporting Program, shall be summarized and reported. The following information shall also be presented:
    a. All laboratory analytical data (a complete data history of all groundwater laboratory analytical data from each Monitoring Point) and appendices shall be presented in electronic format (compact disk in PDF format or another file format acceptable to the Executive Officer). A paper copy of the previous two years of groundwater monitoring data shall be provided in tabular form. Original laboratory analytical reports shall be maintained and made available upon request.
    b. The evaluation and interpretation of all available data.
    c. Tabular historic and current groundwater elevation and depth to groundwater data in monitoring wells, and groundwater flow direction in each identified groundwater zone. Numeric data shall be submitted in spreadsheet format using Excel or equivalent program (electronic data using floppy disk or other acceptable medium) to facilitate data analysis.
    d. Groundwater elevation contour map for each water-bearing zone.
    e. Copy of sampling log (record) for each well.

    [NOTE: Sub-paragraphs "10.c", "10.d" and "10.e" are not applicable to Paragraph 10 "Laboratory Result." This information isn't generated in the laboratory nor are they Laboratory Results. As a result, they should probably be included, but under a different paragraph. It is unclear what is meant by a "sampling log" – please clarify.]

11. Construction data for each new well installed, such as well ID, casing diameter, casing material, boring diameter, total depth, top of casing elevation, screen interval location, and sand pack interval location shall be submitted in tabular form with Quarterly reports.

[NOTE: While this requirement is fine for the monitoring wells, it's not really applicable to domestic wells. Also, there doesn't seem to be any requirement to submit the table. Revisions are suggested above.]

~~E. RELEASE BEYOND FACILITY BOUNDARY~~

~~Any time a release from the facility has proceeded beyond the facility boundary, all persons who either own or reside upon the land that directly overlies any part of the plume (affected persons) shall be notified.~~

~~i. Initial notification to affected persons shall be accomplished within 14 days of making this conclusion and shall include a description of the current knowledge of the nature and extent of the release.~~

~~ii. Subsequent to initial notification, all affected persons including any persons newly affected by a change in the boundary of the release, shall be provided updates within 14 days of concluding there has been any material change in the nature or extent of the release.~~

~~iii. All affected persons shall be provided an update within 30 days of receipt of this monitoring and reporting program. Annual updates shall be provided by January 30th of each year.~~

~~iv. All notifications to all affected persons shall include (at a minimum) the following information:~~

~~a. A summary of the release and corrective action information.~~

~~b. Contact information (i.e., Olin Corporation, Water Board, Santa Clara Public Health Department, Santa Clara Valley Water District).~~

~~c. The results of most recent monitoring data and its availability.~~

~~v. Within seven days of sending each notification to affected persons, the Regional Board shall be provided with both a copy of the notification and a current mailing list of all affected persons.~~

[NOTE: A new section that seems more applicable to the on-Site GTS than Section I "Groundwater Monitoring". This paragraph has been moved, unaltered, to Section III.]

~~F. NOTIFICATION REQUIREMENTS~~

~~1. Olin shall notify the Executive Officer within 24 hours by telephone and within 14 days in writing, of:~~

~~b. Any noncompliance potentially or actually endangering health or the environment.~~

~~c. Any flooding, equipment failure, or other change in site conditions which could impair the integrity of the site or any portion thereof, or of precipitation and drainage control structures.~~

~~2. The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources and with concurrence of the Executive Officer regarding the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this monitoring program, as required by §13750.5 through §13755 and §13267 of the California Water Code.~~

[NOTE: As with Paragraph E, this section that seems more applicable to the on-Site GWTS than Section I "Groundwater Monitoring". It has been moved, unaltered, to Section III.]

[NOTE: The following introductory paragraph is suggested for the On-Site soil and groundwater remediation efforts.]

Section II and Section III of this MRP pertain to monitoring of the on-site soil remediation (Section II) and the groundwater extraction and perchlorate removal system (Section III).

II. SOIL REMEDIATION MONITORING

Groundwater, vadose zone and soil monitoring locations shall be monitored as outlined in Table 4. Reporting shall be in accordance with Section I.D, as applicable.

TABLE 45

MONITORING TYPE	LOCATION	CONSTITUENT	FREQUENCY
Soil Moisture Probes/ Lysimeters	LM-001	Electron Donor, Perchlorate, Bromide	Lysimeters: Monthly during startup/Quarterly thereafter Moisture Probes: Daily, Downloaded Monthly
	LM-002		
	LM-003		
	LM-004		
	LM-005		
	LM-006		
	LM-007		
	LM-008		
	LM-009		
	LM-010		
	LM-011		
	LM-012		
	LM-013		
	LM-014		
	LM-015		
Groundwater Wells	MW-015	Electron Donor, Perchlorate, Bromide, Anions, Dissolved Iron, Manganese, Field Measurements[1], Groundwater Elevations	Quarterly (When groundwater is present) Mar., Jun., Sep., & Dec Monthly: Groundwater Elevations
	MW-016		
	MW-017		
	MW-018		

[1]Field measurements shall include pH, temperature, conductivity, dissolved oxygen (DO) and oxidation-reduction potential (ORP).

Monitoring of the soil remediation system shall be reported with the groundwater treatment system monitoring reports discussed in detail in Section III (B) below.

III. GROUNDWATER TREATMENT SYSTEM MONITORING

Containment and treatment of the onsite perchlorate-contaminated groundwater ~~will be~~ is achieved through the operation of a groundwater extraction and an ion-exchange groundwater treatment system (GTS). Onsite perchlorate-contaminated groundwater ~~will be~~ is extracted by extraction wells and pumped to a 10,000-gallon equalization tank. The water from the tank ~~will be~~ is pumped through ~~a~~ bag filters and then through two ion exchange vessels in series. The effluent ~~will be~~ is discharged into a 10,000-gallon storage tank. The effluent ~~will then be~~ is discharged to either recharge the shallow aquifer (A-zone) via injection wells located in the northern portion of the Site, or can be discharged to the Butterfield Flood Control Ditch (Butterfield Ditch) if necessary. ~~and then by gravity to a storm drain inlet adjacent to the site on Tennant Avenue. A d~~ Drawings ~~showing~~ of the ~~groundwater treatment system~~ GTS are available ~~is located~~ in Olin's 90% Design Report for On-Site Containment and Treatment of Perchlorate in Groundwater, dated October 24, 2003.~~, is hereby incorporated by reference.~~ Drawings of the on-Site recharge system are available in Olin's 90% Design Report for On-Site Recharge System, dated 16 December 2005.~~ The pond serves as an infiltration/evaporation basin for storm water generated by this part of the City of Morgan Hill.~~

The volume and flow rate of water extracted from the extraction wells and the ~~treatment system~~ GTS effluent discharge shall be measured continuously. A treatment system operational log shall be maintained documenting periods of system operation, shutdown and maintenance.

A. DATA COLLECTION: Representative samples shall be collected and analyzed from the following points:
   1. Discharge from the influent equalization tank ~~for the combined influent~~ shall be analyzed for perchlorate, pH, temperature, conductivity, ~~total dissolved solids (TDS) dissolved oxygen (DO)~~, ~~oxidation-reduction potential (~~ORP~~)~~, ~~chlorate,~~ chloride, nitrate, nitrite, ~~phosphate,~~ and sulfate ~~weekly for the first month after startup or until parameters stabilize and monthly thereafter~~ on a monthly basis.
   2. Discharge from the lead ion-exchange vessel shall be analyzed for perchlorate~~, pH, temperature, conductivity, TDS, DO, ORP, chlorate, chloride, nitrate, nitrite, phosphate, and sulfate weekly for the first month after startup or until parameters stabilize and monthly thereafter~~ on a monthly basis.
   3. Discharge from the effluent storage tank ~~discharge to the storm drain~~ shall be analyzed for perchlorate, pH, temperature, conductivity, TDS, DO, ORP, ~~chlorate,~~ chloride, nitrate, nitrite ~~phosphate,~~ and sulfate ~~weekly for the first month after startup or until parameters stabilize and monthly thereafter~~ on a monthly basis.
   4. On an annual basis, a sample of the discharge from the influent equalization tank shall be analyzed for ~~In addition,~~ lead, total chromium and manganese~~, organochlorine pesticides and halogenated volatile organic compounds shall be analyzed every six months during the first year of operation and annually thereafter~~.

[NOTE: Based on all the chlorate, phosphate, TDS data collected since Feb 2004, we recommend that these non-essential parameters be removed from the data collection list. Also, if we collected the parameters in Para 1 for the influent and the only chemical

change occurs through ion exchange of perchlorate, then perchlorate should be the only parameter needed for the mid-point analysis (Para 2). In addition, as we discussed on 12/20/05, we recommend that the organochlorine pesticides and halogenated volatile organic compounds be removed since these constituents are related to the Glastek and Castle Veg-Tech sites and after 2 years of monitoring the constituents have never been detected. (See the Nov 18, 2003 RWQCB letter re: Comments of the 90% Design Report for On-Site Containment and Treatment of Perchlorate in Groundwater.)]

B. GROUNDWATER TREATMENT SYSTEM REPORTING

Monitoring reports shall be submitted **quarterly** on the **30th day of January, April, July, and October** and shall contain information collected during the previous quarter (October-December, January-March, April-June, July-September). The reports shall include the following:

1. Analytical results arranged in a tabular format showing current and historical data. The table at a minimum shall include: sampling date, sample location, analytical results with appropriate units, reporting limits, analytical method used, and current state and/or federal drinking water action levels and regulatory standards.
2. Copy of the treatment system operational log.
3. Monthly ~~Daily~~ and average ~~monthly~~ volume and flow rate data for the extraction and injection wells. GTS effluent ~~Storm drain effluent~~ discharge data for the injection wells and discharge volume ~~is also included if the flow is diverted~~ to the Butterfield ~~retention basin~~ Ditch shall also be reported.
4. Two-dimensional groundwater flow maps showing groundwater surface iso-contours.
5. Copies of certified analytical reports and chain of custody forms for all analyses.
6. An evaluation and interpretation of all available data.

C. CORRECTIVE ACTION SUMMARY: Discuss significant aspects of any corrective action measures performed during the monitoring period. Calculate load removed from the sites' impacted media (groundwater) by mass removal system(s). Mass removal calculations shall be based on actual analytical data. Present discussion and indications, relating mass removal data to the violation the corrective action is addressing.

[NOTE: Para C was copied from Sect I above.]

D. RELEASE BEYOND FACILITY BOUNDARY

Any time a release from the facility has proceeded beyond the facility boundary, all persons who either own or reside upon the land that directly overlies any part of the plume (affected persons) shall be notified.

a. Initial notification to affected persons shall be accomplished within 14 days of making this conclusion and shall include a description of the current knowledge of the nature and extent of the release.
b. Subsequent to initial notification, all affected persons including any persons newly affected by a change in the boundary of the release, shall be provided updates within 14 days of concluding there has been any material change in the nature or extent of the release.
c. All affected persons shall be provided an update within 30-days of receipt of this monitoring and reporting program. Annual updates shall be provided by January 30th of each year.

d. All notifications to all affected persons shall include (at a minimum) the following information:
e. A summary of the release and corrective action information.
f. Contact information (i.e., Olin Corporation, Water Board, Santa Clara Public Health Department, Santa Clara Valley Water District).
g. The results of most recent monitoring data and its availability.
h. Within seven days of sending each notification to affected persons, the Regional Board shall be provided with both a copy of the notification and a current mailing list of all affected persons.

[NOTE: Para D was copied from Sect I above.]

G. NOTIFICATION REQUIREMENTS

1) Olin shall notify the Executive Officer within 24 hours by telephone and within 14 days in writing, of:
   a. Any noncompliance potentially or actually endangering health or the environment.
   b. Any flooding, equipment failure, or other change in site conditions which could impair the integrity of the site or any portion thereof, or of precipitation and drainage control structures.
2) The Discharger or persons employed by the Discharger shall comply with all notice and reporting requirements of the State Department of Water Resources and with concurrence of the Executive Officer regarding the construction, alteration, destruction, or abandonment of all monitoring wells used for compliance with this monitoring program, as required by §13750.5 through §13755 and §13267 of the California Water Code.

[NOTE: Para G was copied from Sect I above.]

The monitoring reports shall be signed by a principal executive officer of the company of at least the level of a vice president or their "duly authorized representative." In addition, the report shall be signed and stamped by a State of California licensed Civil Engineer, Geologist, or Engineering Geologist attesting, under penalty of perjury, that the report is true and accurate.

IV. LEGAL FINDINGS

The Regional Board requires Olin Corporation to submit the monitoring reports in accordance with Section 13267 of the Water Code to determine if the discharge complies with the General Waiver conditions for Treated Groundwater contained in the Regional Board Resolution R3-2002-0115. More detailed information is available in the Regional Board's public file on this matter.

The Regional Board requires Olin Corporation to submit the groundwater and soil treatment monitoring reports in accordance with Section 13267 of the Water Code to determine the concentrations and movement of the perchlorate plume in the vicinity of the Olin site. We require Olin Corporation to submit the monitoring reports as the owner of the property and one of the previous operators of a flare manufacturing facility that caused soil and groundwater perchlorate contamination

at and in the vicinity of the Olin site at 425 Tennant Avenue, Morgan Hill. More detailed information is available in the Regional Board's public file on this matter.

Copies of all correspondence, technical reports, and other documents pertaining to compliance with this order shall be provided in electronic (i.e. Adobe PDF, Excel) and hardcopy format at time they are submitted to the Regional Board. This includes data submission to Geotracker and direct electronic data submission from Olin's laboratory.

ORDERED BY : _____ _____

Roger W. Briggs Date
Executive Officer

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